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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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05/22/2001

Dan F. Ammar

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7520

7590

06/14/2004

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EXAMINER

LEE, EUGENE

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 06/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/862,982	AMMAR, DAN F.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Eugene Lee	2815	<i>Am</i>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Specification***

1. The amendment filed 3/15/04 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: The original disclosure does not describe the new limitation “an exterior circuit board without interconnects attached to the pads on the MMIC”.

Applicant is required to cancel the new matter in the reply to this Office Action.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1 thru 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification does not describe the new limitation “an exterior circuit board without interconnects attached to the pads on the MMIC”. The claims state the limitation “pads on said MMIC for wire and ribbon bonding”, however, the new limitation states “without interconnects.”

It is also unclear what the applicant is referring to in the limitation “interconnects” and how interconnects differ from wire and ribbon bonding. A wire or ribbon is a type of interconnect.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1 thru 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear what the applicant is referring to in the limitation “pads on said MMIC ... for wire and ribbon bonding on an exterior circuit board without interconnects attached to the pads on the MMIC.” It is unclear how the applicant is defining an interconnect as opposed to wire and ribbon bonding.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Insofar as definite, claims 1 thru 3, and 6 thru 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ziegner et al. 6,064,286 in view of Koizumi et al. 5,932,927 in view of Temple et al. 5,135,890. Ziegner discloses (see, for example, FIG. 11) a packaged integrated circuit (microwave integrated circuit (MMIC) package) comprising a millimeter wave circuit

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(MMIC) 32a, base (base plate) 22a, and cover (chip cover) 24a. The end portions of the base plate and cover engage with each other to form the total housing. In column 3, lines 51-56, Ziegner discloses that the base and integrated circuit are substantially thermally matched. Ziegner does not disclose a solder preform contained on the base plate, said MMIC being mounted on the solder perform. However, Koizumi discloses (see, for example, Fig. 2 and column 3, lines 23-25) a high-frequency device package comprising MIC 1 mounted on a base 2 by way of solder. Therefore it would have been obvious to use a solder perform in Ziegner's invention in order to stably attach the base to the millimeter wave circuit.

Ziegner in view of Koizumi does not disclose a microwave monolithic integrated circuit package wherein any pads on said MMIC are directly exposed through openings of the chip cover for wire and ribbon bonding. However, Temple discloses (see, for example, FIG. 5 and 20) a package comprising a semiconductor device, contact pads 16/18, conductive spheres 62, apertures 52, and template. In column 13, lines 12-13, Temple discloses a corresponding aperture is provided in the lid (chip cover) for packaging the device. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have pads on said MMIC directly exposed through openings of the chip cover for wire and ribbon bonding in order to connect the chip to other devices.

Regarding claim 2, see, for example, column 3, lines 47-48 of Ziegner.

Regarding claims 3 and 12, Ziegner in view of Koizumi in view of Temple discloses the claimed invention except for said base plate being about 10 to about 15 mil thick. However, it would have been obvious to one of ordinary skill in the art at the time of invention was made to use this range, since such a thickness would capably support a chip and it has been held that

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where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Regarding claims 6 and 13, Ziegner in view of Koizumi in view of Temple discloses the claimed invention except for the solder preform being about 1 to 2 mil thick. It would have been obvious to one of ordinary skill in the art at the time of invention was made to use this range, since such a thickness would capable connect the chip to the base and it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Regarding the limitation “for wire and ribbon bonding on an exterior circuit board without interconnects attached to the pads on the MMIC”, it has been held that the recitation that an element is capable of performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. In re Hutchison, 69 USPQ 138.

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ziegner et al. ‘286 in view of Koizumi et al. ‘927 in view of Temple et al. ‘890 as applied to claims 1 thru 3, and 6 thru 15 above, and further in view of Harris et al. 5,596,171. Ziegner in view of Koizumi in view of Temple does not disclose the chip cover being made of plastic. However, Harris discloses a semiconductor package comprising a die 110, base 102 and lid (cover) 104. The lid is made of plastic and protects the die from the environment. See, for example, column 2, lines 56-58. Therefore, it would have been obvious to one of ordinary skill in the art at the time of

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invention was made to use plastic for the cover in order to reliably protect the chip from the environment.

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ziegner et al. '286 in view of Koizumi et al. '927 in view of Temple et al. '890 as applied to claims 1 thru 3, and 6 thru 15 above, and further in view of Hayakawa et al. 4,359,754. Ziegner in view of Koizumi in view of Temple does not disclose said solder perform being formed from a gold-tin alloy. However, Hayakawa discloses (see, for example, FIG. 2) a high-frequency semiconductor device comprising chips 41, 42, and base 1. The chips are attached to the base by a Au-Sn solder. See, for example, column 3, lines 3-5. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to use a gold-tin alloy in order to a reliably attach a chip to a base.

#### ***Response to Arguments***

10. Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

#### **INFORMATION ON HOW TO CONTACT THE USPTO**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugene Lee whose telephone number is 571-272-1733. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 571-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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June 5, 2004

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